IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SANDISK CORPORATION,

Plaintiff,

v.

LSI CORPORATION,

Defendant.
_____/

LSI CORPORATION AND AGERE SYSTEMS INC.,

Counterclaimants,

v.

SANDISK CORPORATION,

Counterdefendant.
_____/

No. C 09-02737 WHA

TENTATIVE CLAIM CONSTRUCTION ORDER AND REQUEST FOR CRITIQUE

INTRODUCTION

In this massive patent dispute involving eight digital audio and video technology patents and over twenty accused products, the parties have selected six phrases from the patents-in-suit for construction by this order. These six phrases, construed below, pertain primarily to the audio patents asserted by LSI Corporation and Agere Systems, Inc. against SanDisk Corporation. The parties will have until **NOON ON MONDAY, MARCH 22, 2010**, to submit a five-page critique (double-spaced, no footnotes, and no attachments) limited to points of critical concern. In light of the voluminous briefing already submitted and the lengthy hearing on these matters, this is an opportunity for the parties to focus solely on their most cogent critique.

STATEMENT

Plaintiff and counterdefendant SanDisk filed this action on June 19, 2009, seeking declaratory judgment of non-infringement, invalidity, and unenforceability of eight U.S. patents: (1) No. 5,379,356; (2) No. 5,809,174; (3) No. 5,864,817; (4) No. 5,890,124; (5) No. 5,982,830; (6) No. 6,982,663; (7) No. 5,670,730; and (8) No. 5,696,928. SanDisk also brought several state law allegations against defendant LSI Corporation (Dkt. No. 1). These state law allegations were dismissed, however, due to preemption by federal patent law (Dkt. No. 48). A motion seeking leave to amend the complaint is currently pending.

On August 12, 2009, counterclaimants LSI Corporation and Agere Systems, Inc. (collectively "LSI") returned fire with eight counterclaims of patent infringement. The eight patents standing between the parties encompass various aspects of digital audio and video storage, decompression, and processing technologies, sprawled out across 300 pages and 142 claims. In other words, this is — at the moment — a conflict of ungainly proportions. The Court, however, expects that the battlefront will be narrowed as trial approaches, for the benefit of all involved.

As stated, this claim construction order concerns six phrases found in only a subset of the eight asserted patents — the '730, '928, '124, and '830 patents. These four patents deal with various aspects of audio data processing and storage. Overviews of the patents, the disputed terms and phrases, and the associated claims are covered in detail in the analysis below.

ANALYSIS

Courts must determine the meaning of disputed claim terms from the perspective of one of ordinary skill in the pertinent art at the time the patent was filed. *Chamberlain Group, Inc. v. Lear Corp.*, 516 F.3d 1331, 1335 (Fed. Cir. 2008). While claim terms "are generally given their ordinary and customary meaning," the "claims themselves provide substantial guidance as to the meaning of particular claim terms." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312, 1314 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). As such, all claims of the patent can be "valuable sources of enlightenment as to the meaning of a claim term." *Vitronics*, 90 F.3d at 1582. Additionally, a patent's specification "is

always highly relevant to [] claim construction[.]" *Phillips*, 415 F.3d at 1315 (quoting *Vintronics*, 90 F.3d at 1582). Claims, therefore, "must be read in view of the specification, of which they are a part." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). Finally, courts should also consider the patent's prosecution history, which "can inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1318 (citations omitted). These components of the intrinsic record are a court's primary resources in properly construing claim terms. *Id.* at 1317–18.

While this order acknowledges that the parties have a right to the construction of all disputed claim terms by the time the jury instructions are settled, the Court will reserve the authority, on its own motion, to modify the constructions in this order if further evidence — intrinsic or extrinsic — warrants such a modification. Given that claim construction is not a purely legal matter, but is (as the Supreme Court describes it) a "mongrel practice" with "evidentiary underpinnings," it is entirely appropriate for the Court to adjust its construction of claims prior to trial if the evidence compels an alternative construction. *Markman*, 517 U.S. at 378, 390.

The parties should be aware, however, that this is not an invitation to ask for reconsideration of the constructions herein. Motions for reconsideration may only be made, if at all, in strict accordance with the rules of procedure. With these principles set forth, this order now turns to the patents, claims, and phrases at issue.

1. THE '730 PATENT

The '730 patent, entitled "Data Protocol and Method for Segmenting Memory for a Music Chip," was issued on September 23, 1997. Agere is the owner of all rights, title, and interest in and to the '730 patent. The invention of the '730 patent is a "data protocol" for organizing various types of data contained in a music chip (col 1:46-47). Specifically, the invention sets forth a hierarchical approach to storing digitally encoded audio on a music chip (col 2:25-27).

The invention includes various "headers" that contain supplemental information about the digitally encoded music stored on the chip, such as the encoding and compression method, track title, and artist (cols 2:45–46, 3:24–25). These headers are intended to be automatically downloaded by the music player prior to the processing of audio data. The information contained within the headers is then used by the player to properly decode the music and locate and play music tracks based on user selections (cols. 1:50–54, 1:65–67, 2:1–3).

Two phrases from the '730 patent were selected for construction by this order: (1) "first header having parameters stored therein for use by said audio player in decoding said digitally encoded music stored in said memory" and (2) "selectable categorical information." Both appear in independent claim 1 of the patent, reproduced below (col. 6:14–27) (emphasis added):

> 1. A data format for use in an audio system wherein pre-recorded music is digitally encoded in memory of an integrated circuit music chip, and said music is decoded and reproduced by means of an associated audio player, said data format for storing information pertaining to the contents of said music chip, wherein individual tracks of audio are stored in designated locations in said music chip, said data format including:
>
> > *first header having parameters stored therein for use by said audio player in decoding said digitally encoded music stored in said memory*; and
> >
> > at least one second header, said second header including *selectable categorical information* relating to said individual tracks of audio stored in said memory.

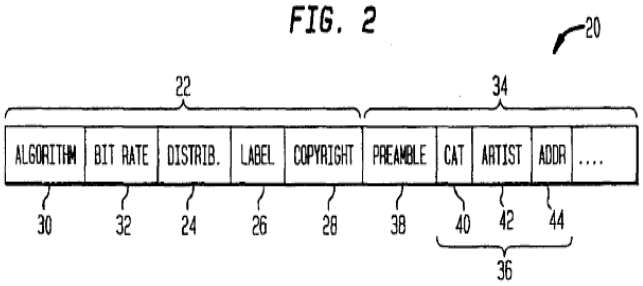
A. **"first header having parameters stored therein for use by said audio player in decoding said digitally encoded music stored in said memory"**

This order will start with the phrase "first header having parameters stored therein for use by said audio player in decoding said digitally encoded music stored in said memory," found in independent claim 1 of the patent. The parties indicated at the claim construction hearing that it is the most important phrase targeted by this order. Proposed constructions are shown below:

LSI'S PROPOSED CONSTRUCTION OF "FIRST HEADER . . . "	SANDISK'S PROPOSED CONSTRUCTION OF "FIRST HEADER . . . "
"A data structure that includes information used by the audio player to decode digitally encoded music stored in memory"	"A *single* data structure that *precedes* digitally encoded music and contains information used by the audio player in decoding *all* digitally encoded music stored in memory"

The term "data structure" — used by both sides — simply refers to the fact that the "first header" consists of structured data. FIG. 2 below illustrates what a data structure looks like in a preferred embodiment of the invention. The portion labeled (22) in FIG. 2 is what the specification called a "global header." As explained below, a "global header" is similar in many ways to a "first header." The "global header" in FIG. 2 provides a good example of why the term "data structure" is used: data, such as algorithm, bitrate, distributor, and other information, in stored in a structured, organized manner.

FIG. 2



The constructions proposed by the parties present three key questions: (1) whether the "data format" of claim 1 allows for multiple "first headers" or just a single "first header," (2) whether the "first header" must *precede* the digitally encoded music, and (3) whether the "first header" must contain information to decode *all* digitally encoded music stored in memory. All of these questions stem from the fact that the term "first header" *never* appeared in the specification! Rather, the term "first header" appeared solely in claims 1 through 17. In other words, after five columns of discussion and disclosure by the patentee, the claims introduced — for the first time — a term never previously seen in the patent.

At oral argument, two explanations were put forth by the parties for the absence of "first header" from the specification: LSI argued that the term "first header" was simply used by the patentee as common patent parlance (*i.e.* standard drafting language) for listing multiple elements in a claim, as in "first means" and "second means," for example. The existence of a "second header" alongside the "first header" in claim 1 was cited in support of this argument. SanDisk, however, asserted that the absence of any reference to "first header" in the specification meant that it was the same as the "global header," a term used frequently and exclusively within the

specification. To support their position, SanDisk pointed to the prosecution history, wherein LSI — at times — used "global header" and "first header" interchangeably.

Having considered both sides, this order finds that LSI's rationale for the patentee's use of "first header" and "second header" carries more weight, and a person having ordinary skill in the relevant art at the time the patent application was filed would have understood "first header" to be broader in scope than the disclosed "global header." As explained below, however, this does not mean LSI's proposed construction will be adopted in full.

i. "Single" Data Structure

While this order has concluded that "first header" is entitled to a broader construction than "global header," this breadth is not unlimited. Indeed, the claims cannot encompass more than what the patentee invented, which was a hierarchical approach to storing digitally encoded audio on a music chip (col 2:25-27). Here, LSI asks the Court to allow multiple "first headers" to be used in claim 1. SanDisk argues that there can only be a *single* "first header." As explained below, SanDisk's position on this issue seems to be correct.

The language used by the patentee in claim 1 strongly supports limiting the "first header" to a single data structure. *Phillips*, 415 F.3d at 1314. Indeed, as the undersigned noted at the claim construction hearing, the patentee's choice to use the phrase "first header," but then the phrase "*at least one* second header," supports a presumption that the "first header" was intended to be a *single* data structure.

An examination of the *purpose* of the "first header" in the context of the present invention further supports this limitation. As the specification explained, "[t]he present invention is a protocol . . . includ[ing] a *hierarchical* arrangement of headers about selections on the chip and the method in which they were coded" (col. 1:47–51) (emphasis added). The specification disclosed a particular two-tiered embodiment of this hierarchy. At the top of the hierarchy was the aforementioned "global header," and at the bottom were "individual headers" (*see* cols. 1:51–65). The "global header" — exactly like the "first header" as described in claim 1 — contained information to decode the digitally encoded music stored in memory (*e.g.*, encoding

algorithm, bitrate, etc.). The "individual headers" — exactly like the "second headers" described in claim 1 — contained information about individual music tracks (*e.g.*, artist, album, genre, etc.).

Given this intrinsic evidence, a person having ordinary skill in the relevant art at the time the patent application was filed would have understood the "first header" and "second headers" as arranged in a similar hierarchy as the "global header" and "individual headers." Supporting this conclusion is the fact that neither the specification nor the prosecution history discussed the possibility of using *multiple* "global headers" or "first headers." Indeed, the intrinsic evidence never explains how the headers would still be hierarchical if this were possible.

LSI's best argument, made at the claim construction hearing, involved the "MP3" digital audio encoding format, which existed at the time the patent application was filed. In the MP3 data format, there are actually multiple "decoding" headers (called "frame headers") within every music track. A single music track may contain thousands of these frame headers. Thus, argued LSI, a person having ordinary skill in the relevant art at the time the patent was filed would have understood, having knowledge of the MP3 format, that multiple "first headers" (which claim 1 described as including "decoding" information) could be associated with a single "second header" (which, LSI argued, are "ID3" data tags associated with individual MP3 music tracks).

This argument, however, cannot overcome the great weight of intrinsic evidence showing a clear intent by the patentee to limit the invention to a *hierarchy* of headers, where multiple "music-track-specific" headers corresponded to a single "decoding" header. True, claim 1 uses the open-ended term "including." *See CIAS, Inc. v. Alliance Gaming Corp.*, 504 F.3d 1356, 1360–61 (Fed. Cir. 2007) ("including" means "comprising"). The Federal Circuit, however, explained in *Elkay Mfg. Co. v. Ebco Mfg. Co.*, 192 F.3d 973, 977-79 (Fed. Cir. 1999), and *Abtox, Inc. v. Exitron Corp.*, 122 F.3d 1019, 1023-27 (Fed. Cir. 1997), that a term in a "comprising" claim may nevertheless be limited to "one" rather than "more than one" when the specification or the prosecution history showed that the term was "used in its singular sense." *See Norian Corp. v. Stryker Corp.*, 432 F.3d 1356, 1359 (Fed. Cir. 2005).

As discussed above, the patentee's choice of claim language between "first header" and "at least one second header" reflected such an intent. *See id.* at 1358–59. Moreover, the

specification disclosed no embodiments other than the "global header," which always was described in singular form. Finally, in a response to a USPTO office action dated June 17, 1996, the patent holder described the "first header" as containing "algorithm, bit rate, *distributor of music, label, and copyright*" information (Liu Decl. Exh. 7 at 10) (emphasis added). If the patentee truly intended the "first header" to be used as a "frame header" in an MP3 bitstream, the patentee would not have described the first header as containing information pertaining to the distributor of music, label, or copyright. Such information would have served no purpose in thousands of frame headers within a single music track. Additionally, all references to "first header" and "global header" in the prosecution history provided to the Court were used in a singular sense.

In sum, the intrinsic evidence demonstrates that a "single data structure" was clearly intended. *See LiebelFlarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 905 (Fed. Cir. 2004); *see also ICU Medical, Inc. v. Alaris Medical Systems, Inc*., 558 F.3d 1368, 1375 (Fed. Cir. 2009).

ii. "Precedes" the Digitally Encoded Music

This proposed limitation by SanDisk is curious. The claim language says nothing about the "first header" preceding the digitally encoded music. Perhaps more problematic, however, is that it is not entirely clear what "precedes" even means in this context. Does it mean "precedes the digitally encoded music" in a bitstream? Or does it mean "precedes the digitally encoded music" in memory? At the claim construction hearing, the parties were asked this very question, and each gave a different answer.

Claim 1, however, provides a clear answer. It discusses a data format for digitally encoded music stored *in memory*. Unlike data presented in a bitstream, where the data is read sequentially as the stream is processed bit-by-bit, data stored in memory does not have to be read from the start of memory to the end of memory. Instead, data stored in memory can be accessed based upon its address. For example, the specification described the "global header" as located at "the very start of memory, presumably at 0x0" (cols. 1:51–54, 2:42–44). "0x0" is the lowest possible address for data storage in memory.

There is no reason, however, why the "first header" must be stored at this or any particular address in memory. For example, the "first header" could be stored at memory address "0xFFFF0" or 0xF0FF0." All that matters is that the audio player knows the memory address of the "first header" so that it can read the data stored therein. Given this backdrop, a person having ordinary skill in the relevant art at the time the patent application was filed would have understood that the "first header" need not "precede" the digitally encoded music stored in memory.

iii. "All" Digital Music

The final question pertaining to this phrase is whether the "first header" must contain decoding information for *all* digitally encoded music in memory. On this issue, nothing in the claim language compels this limitation.

Claim 1 merely set forth a hierarchical data format for storing digital music in memory. It did not require that the claimed format extend across the full scope of memory on a music chip. Indeed, a person having ordinary skill in the relevant art at the time the application was filed would have understood that memory can be partitioned and subdivided in various ways. For example, the memory on a music chip could be divided in half, each half storing a different set of music, each set encoded with different bit rates and algorithms. Under such a scenario, each set of music could have its own "first header" and corresponding "second headers." In sum, nothing in the claim language or intrinsic evidence restricts the possibility that *multiple* iterations of the claimed data format could be present on the same music chip.

iv. Final Construction

Based upon the preceding analysis, this order construes the phrase "first header having parameters stored therein for use by said audio player in decoding said digitally encoded music stored in said memory" as "a single data structure that includes information used by the audio player to decode digitally encoded music stored in memory." This construction is consistent with an earlier construction given to "first header" by the district court in *Agere Systems Inc. v. Sony*

Corporation, 2008 WL 2078308, at *1 (E.D. Tex. May 15, 2008) — a decision to which both parties cited for various aspects of their arguments (Br. 6, Resp. 5–6, Reply 3–4).[1]

B. "selectable categorical information"

The second disputed phrase from the '730 patent is "selectable categorical information." At the claim construction hearing, the parties informed the Court that they had come to a partial agreement on this phrase, and offered two revised constructions for consideration. The revised constructions are shown below.

LSI'S PROPOSED CONSTRUCTION OF "SELECTABLE CATEGORICAL INFORMATION"	SANDISK'S PROPOSED CONSTRUCTION OF "SELECTABLE CATEGORICAL INFORMATION"
"information related to a type of music that can be used to select individual tracks of music"	"information related to a type of music that can be selected by a user"

As seen above, the parties differ only on whether the selectable categorical information must be selectable *by a user*. In claim 1, "selectable categorical information" is defined as information "relat[ed] to . . . individual tracks of audio." The dependent claims explain that this may include the category of music for the track and artist information (cols. 6:14–27, 6:34–44). Importantly, there is no limitation that this information must be selectable by any particular person or thing.

At oral argument, SanDisk pointed to various portions of the specification that described user selection. For example, the specification stated that it was "an object of the present invention[] to provide a storage format for pre-recorded music that is easily selectable *by a user* in regard to general content" (col. 1:40–43) (emphasis added). Elsewhere, the specification described the invention as one that "allows *a user* to make selections by type of music, mist, etc.

[1] The *Sony* construction, which involved a different accused infringer and for which there is no Federal Circuit opinion, is not binding on this court. *See Comcast Cable Commc'ms Corp. v. Finisar Corp.*, 2007 WL 1042821, at *2 (N.D. Cal. Apr. 6, 2007). This court is free to perform an independent construction of the disputed claim terms and phrases. *See Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1329 (Fed. Cir. 2008)).

which is to be played over a period of time" (col. 1:67–2:3) (emphasis added).[2] This idea of user interaction was reiterated by the specification in other places as well (*see, e.g.*, col. 3:49–53).

Even so, this order declines to read SanDisk's proposed limitation into the claim. A person having ordinary skill in the relevant art at the time the patent application was filed would have understood that individual music tracks could be categorized in ways that would be useful to (and therefore selectable by) a computer program, but not necessarily a user. For example, music files might be categorized by whether or not they are "copy-protected." If a user attempts to copy ten music files to a personal music player, a software program might "select" only those files that are not "copy-protected" and limit the copying to just those music files. In such a scenario, the copy-protection information would be "selectable categorical information" pertaining to individual tracks of audio, but it would *not* be selectable by the user. As such, "selectable categorical information" is construed by this order to mean "information related to a type of music that can be used to select individual tracks of music."

2. THE '928 PATENT

The '928 patent, entitled "Memory Chip Architecture for Digital Storage of Prerecorded Audio Data Wherein Each of the Memory Cells are Individually Addressable," was issued on December 9, 1997. Agere is the owner of all rights, title, and interest in and to the '928 patent. Unlike '730 patent just discussed, the '928 patent targets *hardware* — namely, "a memory device for digital storage of pre-recorded audio and other digitally stored data relating thereto."

A. "chip memory apparatus"

The parties dispute the term "chip memory apparatus," which appears twice in dependent claim 15 (col. 8:13–27) (emphasis added):

> 15. A semiconductor *chip memory apparatus* for storage of pre-recorded audio, said memory apparatus adapted for use with a solid state audio player, said apparatus comprising[:]
>
> a plurality of memory cells for storing digital data therein;
>
> address shift register for receiving serial data corresponding to addresses of memory locations;

[2] Mist apparently means artist (col. 3:55–58).

> data shift register for outputting serial data read from selected memory locations;
>
> said *chip memory apparatus* including a housing, said housing including a graphics display area for inclusion of indicia pertaining to said pre-recorded music; and
>
> said housing including a hole disposed at an end thereof, whereby said apparatus may be transported by means of a carrying device attached through said hole.

The parties' proposed constructions are shown below:

LSI'S PROPOSED CONSTRUCTION OF "CHIP MEMORY APPARATUS"	SANDISK'S PROPOSED CONSTRUCTION OF "CHIP MEMORY APPARATUS"
No construction necessary (explained below). Otherwise: "A device that includes memory on a semiconductor chip."	"Memory chip that is adapted to be inserted into an accompanying audio player, wherein the memory chip is not an audio player."

As mentioned at the claim construction hearing, LSI believes that because "chip memory apparatus" appears in the preamble, it should not be construed. On top of this, LSI contends that the preamble *as a whole* is not limiting because it merely recites a purpose or intended use for the invention. These arguments are unpersuasive. While the term "chip memory apparatus" *does* indeed appear in the preamble of claim 15, it *also* appears in body of the claim. This fact alone distinguishes the Federal Circuit decision cited by LSI, which involved a term that appeared exclusively in the preamble. *IMS Tech. Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1434 (Fed. Cir. 2000). Moreover, *IMS Tech* involved the amorphous term "control apparatus." 206 F.3d at 1434. The term disputed here — "chip memory apparatus" — presents concrete questions of whether and to what extent the apparatus should be limited to memory chips. Indeed, this dispute boils down to just that question.

As framed by the parties at oral argument, this construction centers on whether the "chip memory apparatus" can itself be an audio player. SanDisk argues that the "chip memory apparatus" cannot be an audio player. LSI argues the opposite. Thankfully, the claim language provides clear guidance on this issue. The disputed "chip memory apparatus" is found in claims 15 through 19 (*see* cols. 6:50–8:12, 8:13–45). As described in claim 15, a "chip memory apparatus" is used "for storage of pre-recorded audio, said memory apparatus *adapted for use*

with a solid state audio player" (col. 8:13–15) (emphasis added). This language is notably different from claims 1 through 14, which cover a "memory chip" that is "*adapted for insertion into* an associated audio player."

These differences between claims 1 through 14 (the "memory chip" claims), and claims 15 through 19 (the "chip memory apparatus" claims) support two presumptions under the doctrine of claim differentiation: (1) a "chip memory apparatus" is not simply a "memory chip" and (2) a "chip memory apparatus" does not need to be "adapted for insertion into" an audio player. Rather, it need only be "adapted for use with" an audio player. As such, SanDisk's proposed construction directly contradicts the language of the claims.

Finally, nothing in the language of claim 15 prevents the "chip memory apparatus" from itself being an audio player. This does not mean, however, that the audio player mentioned in claim 15 can be the apparatus itself. Recall that the preamble described the "chip memory apparatus" as "adapted for use *with* a solid state audio player" (col. 8:13–16) (emphasis added). A person having ordinary skill in the art at the time the patent application was filed would have understood this language to mean that the "chip memory apparatus" and the audio player *were not one and the same*. Rather, the "chip memory apparatus" must be adapted for use with a *separate* audio player.

In sum, whether or not the "chip memory apparatus" can itself be an audio player is besides the point. Even if it was, this would not satisfy the limitation in claim 15 that the "chip memory apparatus" be adapted for use with a *separate* audio player. As such, the term "chip memory apparatus" is construed to be "a device that includes memory on a semiconductor chip that is adapted for use with a separate audio player."

3. THE '124 PATENT

The '124 patent, entitled "Windowing Method for Decoding of MPEG Audio Data," was issued on March 30, 1999. LSI Corporation is the owner of all rights, title, and interest in and to the '124 patent.

This particular patent involves a great deal of mathematics. It is directed at a "windowing" method for decoding MPEG audio data. The term "windowing," which is a term of

art not in dispute here, describes a "smoothing filter" that must be applied to audio data when it is converted from digital to analog format (col. 1:58–61). "MPEG" (also not disputed) refers to an international standard for representation, compression, and decompression of motion pictures and associated audio on digital media (1:38–42). Windowing and the MPEG standard are prior art. The invention targets an allegedly novel decoding method that supposedly reduces the cost and amount of circuitry required to decode MPEG audio data (col. 2:3–5).

A. "block"

The parties seek construction of the term "block," which appears in all four claims of the '124 patent (col. 31:1–32:18) (emphasis added):

> 1. A method for generating sound from data following an MPEG encoding standard comprising:
>
> transferring a *block* consisting of independent components of time-domain vectors to a first memory, wherein transferring the *block* comprises transferring a total of 17 components from a first time-domain vector and 16 components from a second time-domain vector;
>
> determining products of the independent components in the *block* with corresponding windowing coefficients;
>
> accumulating the products in a plurality of sums, each sum corresponding to a different sound amplitude value; and
>
> generating a sound from the sound amplitude values.
>
> 2. The method of claim 1, wherein:
>
> the step of determining products comprises performing 64 multiplications, each multiplication involving one of the components from the *block* and a windowing coefficient; and
>
> the step of accumulating comprises adding a pair of the products to each of 32 sums.
>
> 3. The method of claim 2, further comprising:
>
> multiplying each of a series of matrixing coefficients by a corresponding combination of components of a frequency-domain vector;
>
> accumulating the products to generate four components of a time-domain vector; and

writing the four components of the time-domain vector to a second memory, wherein transferring the *block* is from the second memory to the first memory.

4. The method if claim 3, further comprising repeating the steps of claims 1, 2, and 3 eight times wherein no two steps of transferring a *block* transfers components from the same pair of time-domain vectors.

Proposed constructions are shown below.

LSI'S PROPOSED CONSTRUCTION OF "BLOCK"	SANDISK'S PROPOSED CONSTRUCTION OF "BLOCK"
"Group of data elements stored as a unit."	"The largest possible collection of data to be used in one or more transfer operations that is stored in contiguous storage locations before the one or more transfer operations"

The claims themselves give meaning to the term "block." In particular, method claim 1 stated that "a block [consists] of independent components of time-domain vectors to a first memory, wherein transferring the block comprises transferring a total of 17 components from a first time-domain vector and 16 components from a second-time domain vector" (col. 31:4–8).[3] Despite this defining claim language, SanDisk argues that numerous additional limitations that do not appear in the claims should apply to the term "block." LSI argues that they should not.

The first limitation proposed by SanDisk — that the block be the "largest possible collection of data to be used in one or more transfer operations" — fails in two respects: (1) it is confusing, and (2) it is wholly unsupported by the intrinsic evidence. As stated, the claim language already included an express limitation on what the block must contain: "a total of 17 components from a first time-domain vector and 16 components from a second-time domain vector." Nothing in the specification supported the additional limitation that the block must contain the "largest possible collection of data." By contrast, the specification touted the efficiency gained by transferring *smaller blocks* — specifically, blocks consisting of 33 vector

[3] While this order cannot possibly explain in a footnote the full details of what these vectors represent, it may be helpful to state that the analog-to-digital conversion of audio information in the present invention involves the conversion of time-domain data to frequency-domain data. Similarly, the digital-to-analog conversion of audio information involves the conversion of frequency-domain data to time-domain data. These vectors are important to the latter conversion.

components as opposed to 64 vector components seen in the prior art. This reduction in block size supposedly cut the number of bytes required to be transferred using the present invention "nearly in half" (*see* col. 11:10–37). In other words, one of the express benefits of the present invention was to minimize both the number *and size* of blocks transferred out of memory for processing. Given this intrinsic evidence, this limitation fails.

SanDisk also proposes that the vector components in a block be "stored in contiguous storage locations before the one or more transfer operations." In other words, SanDisk would not allow the 33 vector components of a block to be scattered across memory, but would require vector components to be lumped together, back to back, without any intervening data. While the claims do not expressly contain this limitation, the specification did lend *some* support to SanDisk's argument. Specifically, the specification noted that "[s]toring the 33 values at *consecutive* addresses in [memory] increases the speed of reading the values for windowing because consecutive addresses can be accessed with a minimum of page changes" (col. 11:5–9) (emphasis added). In other words, contiguous storage would allow more efficient reading of data values, and minimize page changes. Even so, SanDisk's proposed limitation fails because it excludes the exemplary embodiment. In the exemplary embodiment, "at least one block of 33 vector components is *not at consecutive addresses* because the current vector V^0 can be in any of sixteen positions in memory and is not always at the lowest address" (col. 11:37–41) (emphasis added). Stated simply, at least one "block" of vector components will not be contiguously stored in memory prior to transfer. In light of this evidence, this limitation proposed by SanDisk must also fail. *See Vitronics*, 90 F.3d at 1583.

Given that the term "block" is given ample meaning by the surrounding claim language, this order construes "block" as simply "a set of data elements."

4. THE '830 PATENT

The last patent at issue in this order, entitled "Hysteretic Synchronization System for MPEG Audio Frame Decoder," was issued on November 9, 1999. LSI Corporation is the owner of all rights, title, and interest in and to the '830 patent.

Like the preceding patent, the '830 patent also involves the MPEG standard. Specifically, the patent relates to a "hysteretic synchronization system" and related methods for decoding MPEG digital audio data. Specifically, it is directed towards preventing "false initial synchronization" when decoding an audio bitstream and "loss of synchronization caused by occasional data errors" (col 1:12–16). Both of these problems — false initial synchronization and loss of synchronization — allegedly plagued each of the methods used in the prior art (cols. 1:12–16, 2:40–43).

Synchronization between a digital music decoder and the audio bitstream (which, as described earlier, is simply a stream of data bits) is essential to proper playback of digitally encoded audio, and proper synchronization between audio and video tracks. If the decoder falls "out of sync," sound and video may no longer match, and sound quality is degraded (*see* col. 4:10–16). Audio data contained in a bitstream can be segmented into what are called "audio frames." At the start of each frame is what is called a "synchronization code," which is essentially a data marker (in the preferred embodiment, a series of twelve binary ones) to tell the decoder that a new audio frame is starting. As the bitstream is processed by the decoder, the decoder will ideally process each audio frame one after the other as the stream of bits are read. The decoder will remain synchronized so long as it knows where each audio frame begins in the bitstream.

As previewed above, the present invention is allegedly an improvement over the prior art because it provides "a reliable, faster synchronization system with a substantially improved tolerance for [audio] frames with errors, better tracking of bad frames, and maintenance of audio/video synchronization" (col. 4:10–15).

The parties initially sought construction of two phrases in the '830 patent: (1) "data header" and (2) "sensing intervals between successive synchronization codes." These phrases appeared in claims 1, 4, 5, 16, and 20, shown below (col. 8:13–27):

> 1. A system for synchronizing a data processing unit to a bitstream having synchronization codes successively spaced by a predetermined interval with data for processing disposed between the synchronization codes, said bitstream having a *data header* comprising a bitrate and a sampling frequency, said system comprising:

a detector for detecting said synchronization codes;

a sensor for *sensing intervals between successive synchronization codes*;

a comparator for comparing said intervals with said predetermined interval;

a controller for determining both:

(A) whether the system is synchronized to the bitstream after the comparator has detected a first predetermined number of said intervals; and

(B) whether the system is unsynchronized to the bitstream after the comparator has detected a second predetermined number of said intervals; and

a header sensor for sensing said *data header* and calculating said predetermined interval from said information.

4. A system according to claim 1, wherein said *data header* includes information from which said predetermined interval can be calculated.

5. A system for synchronizing a data processing unit to a bitstream having successively spaced synchronization codes and data disposed between the synchronization codes, the bitstream further comprising a *data header* following each synchronization code including information from which intervals between successive synchronization codes can be calculated, the system comprising:

a detector for detecting said synchronization codes;

a sensor for *sensing intervals between successive synchronization codes*;

a comparator for comparing said intervals with synchronization code intervals;

a controller for determining if the system is synchronized to the bitstream depending on satisfaction of a first predetermined condition and if the system is unsynchronized to the bitstream depending on satisfaction of a second predetermined condition; and

a sensor for sensing said *data header* and calculating intervals between successive synchronization codes from said information.

16. A method for synchronizing a data processing system to a bitstream including synchronization codes successively spaced from each other by a predetermined interval, data disposed between the synchronization codes, and a *data header* including

information from which said predetermined interval can be calculated, comprising the steps of:

(a) detecting said synchronization codes;

(b) *sensing intervals between successive synchronization codes*;

(c) comparing said intervals with said predetermined interval;

(d) determining that the system is synchronized to the bitstream based on a first predetermined condition;

(e) determining that the system is unsynchronized to the bitstream based on a second predetermined condition; and

(f) sensing said *data header* and calculating said predetermined interval from said information between steps (a) and (c).

20. A method for synchronizing a data processing system to a bitstream including synchronization codes spaces at a predetermined interval, data disposed between the synchronization codes, and a *data header* including information from which said predetermined interval can be calculated, comprising the steps of:

(a) detecting said synchronization codes;

(b) *sensing intervals between successive synchronization codes*;

(c) comparing said intervals with said predetermined interval;

(d) determining system synchronization and unsynchronization based on predetermined conditions, wherein:

(e) sensing said header and calculating said predetermined interval from said information between steps (a) and (c).

At the claim construction hearing, however, the parties informed the Court that they had resolved their dispute regarding the term "data header." The construction agreed upon by the parties is reproduced below.

A. "data header"

The parties agreed that "data header" means "in an audio data bitstream, data describing encoding characteristics of an audio data frame, wherein said data precedes the audio data of the frame."

B. "sensing intervals between successive synchronization codes"

The last phrase disputed in this order is "sensing intervals between successive synchronization codes." Proposed constructions are shown below.

LSI'S PROPOSED CONSTRUCTION OF "SENSING INTERVALS BETWEEN SUCCESSIVE SYNCHRONIZATION CODES"	SANDISK'S PROPOSED CONSTRUCTION OF "SENSING INTERVALS BETWEEN SUCCESSIVE SYNCHRONIZATION CODES"
"Measuring the frame length(s) between successive synchronization codes based on the number of bits between the codes"	"Measuring the magnitudes of the intervals between the two successive synchronization codes"

As stated, keeping the decoder synchronized with the audio bitstream was one of the primary objects of the present invention. The invention ideally accomplished this task by performing three steps: (1) calculating the expected interval between successive synchronization codes using the bitrate and sampling frequency of the audio data; (2) measuring the actual interval between successive synchronization codes; and (3) comparing the expected interval with the actual interval. If the two intervals matched, then the decoder and bitstream would be "in sync" with each other (*see* col. 2:66–3:4).

A person having ordinary skill in the relevant art at the time the patent application was filed would have understood that the asserted claims covered this three-step approach. In particular, such a person would have understood that the "predetermined interval" found in the claims referred to the interval that was calculated using bitrate and sampling frequency information contained in the data header (*see* col. 10:5–25, 10:38–58, 11:29–47, 12:1–17).

The question presented is whether the phase "sensing intervals between successive synchronization codes" is limited to one specific approach disclosed in the specification for measuring the actual interval between synchronization codes (step two of the three-step process), or whether alternative approaches at measuring the interval between synchronization codes could be used. Specifically, LSI's construction limits the "measuring" step to counting the number of bits between successive synchronization codes, while SanDisk's construction does not.

The claims provide insight into the proper construction of this phrase. Both claim 1 and claim 5 include a "sensor for sensing intervals between successive synchronization codes" (col.

10:38–58). LSI's proposed construction would require this sensor to "measure the frame length" between successive synchronization codes "based upon the number of bits between the codes." This construction, however, is inconsistent with claim 15. As shown below, claim 15 — which is dependent upon claim 5 — adds a *new* element to the system called a "counter." The "counter" performs the very function that LSI's proposed construction would impart on the "sensor":

> 15. A system as in claim 5, wherein:
>
> said bitstream comprises bits of data such that said intervals between successive synchronization codes corresponds to a number of said bits; and
>
> *the system further comprises a counter for counting said bits between successive synchronization codes* to determine said number of said bits and said interval between successive synchronization codes.

Given this language, claim differentiation weighs strongly against a finding that the "sensor for sensing intervals between successive synchronization codes" in claim 5 is limited to the exact same function as the "counter" in claim 15. Additionally, nowhere in the claim language is the term "frame length" — used in LSI's proposed construction — used to describe the interval between successive synchronization codes. Rather, the claims exclusively refer to the term "interval" to describe the separation between successive synchronization codes. In light of the clear language of the claims, LSI's proposed construction must be rejected.

SanDisk's proposed construction, by contrast, properly employs the term "interval" used throughout the claims, and is consistent with the description of the present invention set forth in the specification (*see* 2:66–3:3, 3:37–42). Moreover, it does not improperly limit the "sensor" or the "sensing" step to counting "the number of bits between" synchronization codes. Given the intrinsic evidence set forth above, a person having ordinary skill in the relevant art would have understood "sensing intervals between successive synchronization codes" to mean "measuring the interval between successive synchronization codes."

CONCLUSION

The constructions set forth above will apply in this dispute. The Court will reserve the authority, on its own motion, to modify these constructions if further evidence warrants such a modification.

Additionally, the parties have until **NOON ON MONDAY, MARCH 22, 2010**, to submit a five-page critique (double-spaced, no footnotes, and no attachments) limited to points of critical concern. In light of the voluminous briefing already submitted and the lengthy hearing on these matters, this is an opportunity for the parties to focus solely on their most cogent critique.

IT IS SO ORDERED.

Dated: March 17, 2010.

WILLIAM ALSUP
UNITED STATES DISTRICT JUDGE